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October 8, 2010
DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Raymond Lillback
Serial No. : 10/533,097
Filing Date : April 25, 2006
For : BYPASS VALVE
Group Art Unit : 3753
Examiner : John C. Fox
Attorney Docket No. : 16-170P/US - 1513

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION BY KEITH E. BROWN

Sir:

1. I am currently the Senior Technology Advisor for Kinetico Incorporated, a manufacturer of state-of-the-art water treatment equipment and I am also the Senior Technology Consultant for Fairmont Water Solutions. I received a Bachelor of Mechanical Engineering from Bucknell University

in 1968.

2. I have 34 years of experience in residential and commercial water purification and industrial water and waste water treatment. I have been employed by Kinetico Incorporated for 32 years and during my employment at Kinetico Incorporated, I have held a variety of positions, including Chief Engineer, Vice President of Research and Development, Vice President of Product Management and President of Engineered Systems, Inc. (a wholly-owned subsidiary of Kinetico Incorporated). Prior to my employment at Kinetico Incorporated, I held engineering positions at Life Systems, Inc. of Beachwood, Ohio (where I worked on water recycling equipment for the U.S. Army); Cleveland Metal Abrasive of Cleveland, Ohio; Horizons Research of Beachwood, Ohio; Addressograph Multigraph of Euclid, Ohio; and US Steel of Lorain, Ohio. I have been a member for more than 25 years of the American Water Works Association (AWWA) and a member of the ASME for over 40 years. I also am a member of the Water Quality Association (WQA) and was Chairman of its Technical Committee for 3 years.
3. I have published articles on deionization water applications for "Water Conditioning and Purification" Magazine. I also created and presented a seminar on membrane technologies to the NSF POU (National Sanitation

Foundation Point of Use) conference held in Orlando, Florida in February 2003. As a result of the above-listed education and experience, I am extremely knowledgeable in the designing of all types of water and waste water processing equipment and the application of existing and emerging technologies involved in liquid separations, including ion exchange, membranes and filtration media.

4. I am a named inventor on the following U.S. patents, all of which relate to water treatment technology: 4,298,025; 4,427,545; 4,693,814; 4,764,280; 4,804,465; 5,069,779; and 7,182,858 B2.
5. I am familiar with U.S. application serial number 10/533,097 (the '097 application), entitled "BYPASS VALVE". I have read and understand the specification and claims in this application.
6. I have reviewed the Office Action in the '097 application that was mailed June 23, 2010.
7. I have carefully reviewed the following prior art which was cited in the above-identified Office Action including: U.S. Patent No. 925,692 to Gold; U.S. Patent No. 3,191,628 to Kirkwood et al.; U.S. Patent No. 4,653,537 to Voith; and U.S. Patent No. 1,501,552 to Bergman.

8. I have reviewed the preliminary amendment dated May 18, 2010, filed by Applicants' in the '097 application, including amended independent claim 6 and dependent claims 9, 10, 15, 16 and 17.
9. None of the patents cited in the above-identified Office Action, taken alone or in combination, teach or suggest the bypass valve set forth in the claims pending in the '097 application.
10. Claim 6 claims a bypass/diverter valve for controlling the communication of a fluid supply to and from a fluid treatment device. Paragraph b) of claim 6 claims a housing having a pair of ports for conveying fluid to and from a water treatment device. One of the ports delivers fluid to the water treatment device, whereas the other port receives treated water from the water treatment device. Claim 6 calls for a housing that defines a cylindrical valve chamber including a cylindrical side wall and an end wall. Claim 6 also recites a disc-like member that defines openings for communicating a chamber region of the cylindrical valve chamber with a spool region and further recites that the chamber region is defined between the cover member and the disc-like member. More importantly, the claim recites a fluid flow path from a spool region to a transfer chamber. As detailed in paragraph (i) of claim 6, the flow path is established from the spool region through openings in the disc-like member through the

chamber region and through a wall opening into the transfer chamber. This flow path is clearly described in paragraph 0043 of the published application and is shown in several of the figures, including Fig. 17.

11. The Gold patent does not teach (or even remotely suggest) the claimed features identified above. The Gold patent discloses a "short circuiting" valve, (see page 1, line 30) for use in a heating system to control the flow of heating medium (see page 1, lines 35-36). The Gold patent does not disclose or even mention a valve that has a housing that includes a pair of ports, one of the ports delivering fluid to be treated to a water treatment device and the other port receiving treated fluid from the water treatment device. A heating system is not a water treatment device. In addition, Gold does not disclose a cylindrical wall. Instead, at lines 56-69, Gold discloses webs 24, 25, 26 and 27 which constitute seats for the rotary valve piece.
12. Gold does not teach (or even remotely suggest) the flow path set forth in claim 6, which is critical to the invention. Gold does disclose perforations 32 for communicating a pressure chamber 40 with the interior of the casing (see page 1, lines 99-104). It is well known in fluid dynamics that fluid flow occurs from a higher pressure region to a lower pressure region. Accordingly, slight flow may occur simultaneously through both perforations 32 in one direction.

It is impossible for fluid to flow into the pressure chamber 40 through one perforation, and concurrently flow out the chamber through the other perforation. Put in another way, Gold does not disclose a flow path that can support fluid flow from a spool region through a chamber region and through a wall opening into a transfer chamber. The pressure region 40 disclosed in Gold only communicates with the casing chamber. The pressure chamber 40 in Gold is a blind chamber and, hence, is appropriately termed a pressure chamber. The chamber region set forth in claim 6 supports fluid flow from the openings in the disc-like member to the wall opening which, in turn, communicates with the transfer chamber. Most importantly, if the perforations shown in the Gold patent were used in the claimed valve, the claimed valve would be inoperative because the perforations could not sustain the fluid flow required in the disclosed and claimed bypass/diverter valve. Moreover, even Gold recognizes that the chamber 40 does not sustain flow through it. At page 1, line 86, Gold states that the "upper disk has one or more perforations". The fact that Gold teaches that only one perforation may be used is confirmation that there cannot be fluid flow "through the chamber" (as claimed in paragraph (i) of claim 6) because one perforation cannot support fluid flow simultaneously into and out of the chamber.

13. Claim 6 was also rejected as being anticipated by U.S. Patent No. 1,501,552 to Bergman. This patent discloses a gas and air reversing valve. The Bergman patent does not disclose a bypass/diverter valve for controlling the communication of a fluid supply to and from a fluid treatment device. Claim 6 specifically calls for a pair of ports, one of the ports for delivering fluid to be treated to a water treatment device, the other port of the pair for receiving treated fluid from the water treatment device. Bergman does not disclose or even remotely suggest a water treatment device or ports on a valve that are connected to a water treatment device. It discloses a rather complex valve for controlling the delivery of air and fuel gas to a blast furnace and a blast furnace stove. Claim 6 also claims a cylindrical wall that defines an opening in fluid communication with a chamber region such that a flow path is established from a spool region through openings in a disc-like member through a chamber region and through the wall opening into a transfer chamber. Bergman does not disclose or even remotely suggest this flow path; Bergman does not disclose a flow path which includes a wall opening in a cylindrical wall. Not only does Berman not disclose a water treatment system or a valve for use with a water treatment system, it does not disclose a valve that includes the claimed flow path that is established from a spool region through

openings in a disc-like member through a chamber region and through a wall opening (defined in a cylindrical wall) and into a transfer chamber. I noted, in reviewing the Office Action, that the Examiner does not point to any structure in the Bergman patent that corresponds to the transfer chamber, the chamber region, etc. The Examiner does state that "a flow path exists as recited through the openings in member 16" (emphasis added). Claim 6 calls for an opening in a cylindrical wall. Member 16 in Gold is not a cylindrical wall and, therefore, there is no corresponding structure in the Bergman patent for the claimed cylindrical wall opening.

14. Based on my review of the prior art, the specification and claims of the '097 application and my knowledge of water treatment devices and technology, the bypass diverter valve set forth in claim 6 is not taught or even remotely suggested by the above discussed prior art.
15. I am also familiar with U.S. Patent No. 4,972,877 (the '877 patent), which discloses an earlier bypass valve. I am also familiar with the actual bypass valve made in accordance with this patent. The bypass/diverter valve disclosed in the '097 patent application is a substantial improvement over the valve disclosed in the '877 patent. One of the improvements forming part of the bypass/diverter valve disclosed in the '097 application is the ability to

change the function of the ports connected to the water treatment device. As disclosed in the description in the '097 application either port can be configured as an inlet port for delivering fluid to the water treatment device or an outlet port for receiving treated fluid from the water treatment device. In the bypass valve disclosed in the '877 patent, the function of the corresponding ports could not be switched. The flow path set forth in claim 6 is critical to this feature and, in particular, it allows the functions of the ports connected to the water treatment device to be switched.

I declare that all statements made herein of my own knowledge are true; that all statements made here and on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application and any registration resulting therefrom.

Signed at Newbury, Ohio, USA 44065
this 7TH day of October, 2010.


Keith E. Brown